

WHAT IS CLAIMED IS:

1. An OFDM signal receiver device comprising:
 - a Fourier transform unit (1) for performing a Fourier transform on a received 5 OFDM signal and outputting a subcarrier component obtained as a result of said Fourier transform;
 - a pilot signal-extracting unit (2) for extracting a pilot signal contained in said subcarrier component;
 - a known signal generating unit (3) for generating and outputting a known signal 10 corresponding to said pilot signal;
 - a first divider unit (4) for dividing said pilot signal by said known signal and outputting a transmission channel characteristic corresponding to said pilot signal;
 - an interpolation filter unit (5) for calculating a transmission channel characteristic corresponding to said subcarrier component based on said transmission 15 channel characteristic corresponding to said pilot signal;
 - a second divider unit (7) for dividing said subcarrier component output from said Fourier transform unit (1) by said transmission channel characteristic output from said interpolation filter unit (5) to output a demodulated signal;
 - a noise power-calculating unit (8) for calculating an electric power 20 corresponding to a noise component contained in said demodulated signal based on said demodulated signal and outputting a noise power signal corresponding to a result of said calculation;
 - a weighting factor-calculating unit (9) for calculating a weighting factor for a branch metric based on said noise power signal and said transmission channel 25 characteristic corresponding to said subcarrier component that is output from said

interpolation filter unit; and

a decoding unit (10) for decoding said demodulated signal based on said weighting factor.

5 2. The OFDM signal receiver device according to claim 1, wherein

said noise power-calculating unit (8) comprises:

a pilot correction signal-extracting unit (80) for extracting a pilot signal contained in said demodulated signal;

10 a signal point distance-calculating unit (81) for calculating a distance between a signal point of said extracted pilot signal and a signal point of said known signal, or a squared value of said distance; and

15 an averaging unit (82) for calculating an average value of said distance or said squared value of said distance corresponding to each said pilot signal calculated in said signal point distance-calculating unit (81) and outputting a signal corresponding to a result of said calculation as said noise power signal.

3. The OFDM signal receiver device according to claim 1, wherein

20 said noise power-calculating unit (8) calculates a power value corresponding to a noise component contained in said OFDM signal and based on a signal corresponding to a difference between a power value corresponding to said received OFDM signal and a predetermined threshold value, and outputs as said noise power signal a signal corresponding to a result of said calculation.

4. The OFDM signal receiver device according to any one of claims 1 through

25 3, wherein

said weighting factor-calculating unit (9) comprises:

a signal level-calculating unit (90) for calculating and outputting an amplitude or a squared amplitude of a signal corresponding to said subcarrier component based on said transmission channel characteristic corresponding to said subcarrier component; and

5 a level conversion unit (91) for multiplying said amplitude or said squared amplitude by a predetermined coefficient according to said noise power signal, and outputting, as said weighting factor, a result obtained by adding a predetermined offset to a result of the multiplication.

10 5. The OFDM signal receiver device according to claim 4, wherein

said weighting factor-calculating unit (9) further comprises:

a level conversion reference unit (140) configured to include a conversion table storing an output value that is associated with said amplitude or said squared amplitude by a predetermined function; and

15 wherein said level conversion unit (91) multiplies said output value output from said level conversion reference unit by said predetermined coefficient, and outputs, as said weighting factor, a result obtained by adding said predetermined offset to a result of said multiplication.

20 6. The OFDM signal receiver device according to claim 5, wherein

said predetermined function is a nonlinear function; and

if said amplitude or said squared amplitude is less than a predetermined value, said level conversion reference unit (140) outputs, as said output value, a smaller value than an output value that is to be output when said output value is in a linear relationship

25 with said amplitude or said squared amplitude; and

if said amplitude or said squared amplitude is equal to or greater than said predetermined value, said level conversion reference unit (140) outputs a constant value as said output value.

5 7. The OFDM signal receiver device according to claim 4, wherein
said weighting factor-calculating unit (9) further comprises:

an adjusting unit (150, 151) for adjusting said noise power signal based on a modulation format or a coding rate corresponding to said OFDM signal and outputting to said level conversion unit said noise power signal that has been adjusted.

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8. The OFDM signal receiver device according to claim 5, wherein
said weighting factor-calculating unit (9) further comprises:

an adjusting unit (150, 151) for adjusting said noise power signal based on a modulation format or a coding rate corresponding to said OFDM signal and outputting
15 said noise power signal that has been adjusted to said level conversion unit.

9. The OFDM signal receiver device according to claim 5, wherein
said weighting factor-calculating unit (9) further comprises:

an adjusting unit (150, 151) for adjusting said noise power signal based on a
20 modulation format or a coding rate corresponding to said OFDM signal and outputting to
said level conversion unit said noise power signal that has been adjusted.

10. An OFDM signal receiving method, comprising:

performing a Fourier transform on a received OFDM signal to output a

25 subcarrier component as a result of said Fourier transform;

- extracting a pilot signal contained in said subcarrier component;
- generating and outputting a known signal corresponding to said pilot signal;
- dividing said pilot signal by said known signal to calculate a transmission channel characteristic corresponding to said pilot signal;
- 5 calculating a transmission channel characteristic corresponding to said subcarrier component based on said transmission channel characteristic of said pilot signal;
- dividing said subcarrier component by said transmission channel characteristic corresponding to said subcarrier component to output a demodulated signal;
- 10 calculating power corresponding to a noise component contained in said demodulated signal based on said demodulated signal and outputting a noise power signal corresponding to a result of said calculation;
- calculating a weighting factor for a branch metric based on said transmission channel characteristic corresponding to said subcarrier component and said noise power signal; and
- 15 decoding said demodulated signal based on said weighting factor.